

IN THE CLAIMS

Please amend the claims as follows:

Please cancel claim 12 the elements of which (elongated conductors) have been added to claim 1 to more clearly define the patentable subject matter of the invention.

Please cancel claim 14.

Please cancel claim 24 the elements of which were added to claim 20 to more clearly define the patent able subject matter of the invention.

Please add claim 32 which depends from amended claim 1.

No New matter has been added by the amendments.

1. (Currently Amended) An improved electrode assembly for use inside a battery having case with electrolyte therein, comprising:

a plurality of electrodes arranged in a stacked relationship;

said plurality of electrodes including at least one positive electrode, said positive electrode having a positive active surface area communicating with a positive conducting edge portion;

said plurality of electrodes including at least one negative electrode, said negative electrode having a negative active surface area communicating with a negative conducting edge portion;

each said positive conducting edge portion forming a positive current collector along substantially one entire edge of said positive electrodes;

each said negative conducting edge portion forming a negative current collector along substantially one entire edge of each of said negative electrodes;

a porous separator disposed between said positive active surface area of each of said positive electrodes and said negative active surface area of each of said negative electrodes; and

~~means communicate electric current to a device exterior to said battery from said positive conducting edge portion of said positive electrode and said negative conducting edge portion of said negative electrode.~~

a first elongated conductor in contact with substantially the entire length of said positive conducting edge portion of said positive electrode;

means for attachment of said first elongated conductor to said positive edge portion;

a second elongated conductor in contact with substantially the entire length of said negative conducting edge portion of said negative conducting edge portion of said negative electrode;

means for attachment of said second elongated conductor to said negative edge portion; and

means to communicate electric current to a device exterior to said battery from said first elongated conductor and said second elongated conductor.

2. (Original) The improved electrode assembly as defined in claim 1 wherein said positive surface and said negative surface overlap, said overlap defining a reaction plane; and

the sum of the distance to said positive conducting edge and the distance to said negative conducting edge, from any point on said reaction plane is substantially equal.

3. (Original) The improved electrode assembly as defined in claim 1 wherein each electrode in said plurality of electrodes is formed of electrically conductive substrate having electrolytically active material located on said electrically conductive substrate;

the area of said electrolytically active material located on said electrically conductive substrate forming said positive electrode defining said positive active surface area;

said positive conducting edge portion of said positive electrode being the area of said electrically conductive substrate adjacent to said positive active surface area; and

the area of said electrolytically active material located on said electrically conductive substrate forming said negative electrode defining said negative active surface area; and

said negative conducting edge portion being the area of said electrically conductive substrate forming said negative electrode adjacent to said negative active surface area.

4. (Currently Amended) The improved electrode assembly as defined in claim 1 wherein ~~said positive conducting edge portion, of each of said positive electrodes are stacked adjacent to each other,~~

said positive conducting edge portion, of each of said positive electrodes are stacked adjacent to each other in substantial alignment with each other thereby forming a positive edge portion;

said negative conducting edge portion, of each of said negative electrodes are stacked adjacent to each other in substantial alignment with each other thereby forming a negative edge portion; and

said positive end portion being located on an opposite side of said electrode assembly from said negative edge portion.

5. (Currently Amended) The improved electrode assembly as defined in claim 2 wherein ~~said positive conducting edge portion, of each of said positive electrodes are stacked adjacent to each other,~~

said positive conducting edge portion, of each of said positive electrodes are stacked adjacent to each other in

substantial alignment with each other thereby forming a positive edge portion;

said negative conducting edge portion, of each of said negative electrodes are stacked adjacent to each other in substantial alignment with each other thereby forming a negative edge portion; and

said positive end portion being located on an opposite side of said electrode assembly from said negative edge portion.

6. (Original) The improved electrode assembly as defined in claim 1 wherein said plurality of electrodes are stacked with said positive active surface area of said positive electrode offset from said negative conducting edge portion of said negative electrode and said negative active surface area of said negative electrode are offset from said positive conductive edge portion of said positive electrode.

7. (Original) The improved electrode assembly as defined in claim 5 wherein said plurality of electrodes are stacked with said positive active surface area of said positive electrode offset from said negative conducting edge portion of said negative electrode and said negative active surface area of said negative electrode are offset from said positive conductive edge portion of said positive electrode.

8. (Original) The improved electrode assembly as defined in claim 6 wherein said positive active surface area of said at least one positive electrode is smaller than the dimensions of said negative active surface area of said at least one negative electrode.

9. (Original) The improved electrode assembly as defined in claim 7 wherein said positive active surface area of said at least one positive electrode is smaller than the dimensions of said negative active surface area of said at least one negative electrode.

10. (Original) The improved electrode assembly as defined in claim 1 wherein said positive conducting edge portion and said negative conducting edge portion are positioned on adjacent sides of said electrode assembly formed by said plurality of electrodes arranged in said stacked relationship.

11. (Currently Amended) The improved electrode assembly as defined in claim 1 wherein said ~~electrical conductors~~ said first elongated conductor coupled to said positive conducting edge portion of said positive electrode and said second elongated conductor coupled to said negative conducting edge portion of said negative electrode respectively secure said plurality of electrodes in said stacked relationship.

12. (Cancelled)

13. (Currently Amended) The improved electrode assembly as defined in claim ~~2~~ 1 wherein said means communicate electric current to a device exterior to said battery ~~from said positive conducting edge portion of said positive electrode and said negative conducting edge portion of said negative electrode comprise conductors elongated to extend substantially the entire length of said positive conducting edge portion of said positive electrode and said negative conducting edge portion of said negative electrode respectively,~~ comprises each of said first elongated conductor and second elongated conductor ~~conductors~~ communicating with a respective terminal on the exterior of the battery.

14. (Cancelled)

15. (Currently Amended) The improved electrode assembly as defined in claim ~~13~~ 1 wherein said first elongated conductor and said second elongated ~~conductors~~ have a bulk resistivity less than $10e-6$ ohm-cm.

16. (Currently amended) The improved electrode assembly as defined in claim ~~15~~ 1 wherein said first elongated conductor and said second elongated ~~conductor~~ is ~~are~~ copper.

17. (Currently amended) The improved electrode assembly as defined in claim 13 wherein said first elongated conductor and said second elongated conductor ~~is~~ are copper.

18. (Original) The improved electrode assembly as defined in claim 16 wherein said conductor is nickel plated.

19. (Original) The improved electrode assembly as defined in claim 17 wherein said conductor is nickel plated.

20. (Currently Amended) An improved electrode assembly for use in battery comprising:

a plurality of electrodes arranged in a ~~rolled~~ stacked relationship;

said plurality of electrodes including at least one positive electrode, said positive electrode having a positive active surface area communicating with a positive conducting edge portion;

said plurality of electrodes including at least one negative electrode, said negative electrode having a negative active surface area communicating with a negative conducting edge portion;

each said positive conducting edge forming a positive current collector along substantially one entire edge of said positive electrodes;

each said negative conducting edge forming a negative current collector along substantially one entire edge of each of said negative electrodes;

a porous separator in a rolled engagement disposed between said positive active surface area of each of said positive electrodes and said negative active surface area of each of said negative electrodes; and

~~means communicate electric current exterior to said battery from said positive conducting edge portion of said positive electrode and said negative conducting edge portion of said negative electrode.~~

a first elongated conductor in contact with substantially the entire length of said positive conducting edge portion of said positive electrode;

means for attachment of said first elongated conductor to said positive edge portion;

a second elongated conductor in contact with substantially the entire length of said negative conducting edge portion of said negative conducting edge portion of said negative electrode;

means for attachment of said second elongated conductor to said negative edge portion; and

means to communicate electric current to terminals exterior to said battery from said first elongated conductor and said second elongated conductor respectively.

21. (Original) An improved electrode assembly for use in battery of claim 20 wherein said plurality of electrodes are arranged in said ~~rolled~~ stacked relationship and said porous separator in said rolled engagement, around a mandrel.

22. (Original) The improved electrode assembly as defined in claim 20 wherein the sum of the distance to said positive conducting edge and the distance to said negative conducting edge, from any point on said positive surface area is substantially equal; and

the sum of the distance to said positive conducting edge and said negative conducting edge, from any point on said negative surface area is substantially equal.

23. (Original) The improved electrode assembly as defined in claim 21 wherein the sum of the distance to said positive conducting edge and the distance to said negative conducting edge, from any point on said positive surface area is substantially equal; and

the sum of the distance to said positive conducting edge and said negative conducting edge, from any point on said negative surface area is substantially equal.

24. (Canceled)

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25. (Currently Amended) The improved electrode assembly as defined in claim ~~24~~ 20 wherein said conductors have a bulk resistivity less than $10e-6$ ohm-cm.

26. (Original) The improved electrode assembly as defined in claim 25 wherein said conductor is copper.

27. (Original) The improved electrode assembly as defined in claim 25 wherein said conductor is nickel plated.

28. (Currently Amended) The improved electrode assembly as defined in claim ~~24~~ 20 wherein said first elongated electrical conductor and said second elongated electrical conductor ~~electrical conductors~~ each have ~~at~~ a plurality of said terminals, each of said plurality of terminals respectively communicating from a point exterior to said case on one end with said first and second elongated conductors at opposite ends. communicating therewith along side edges of said electrode assembly.

29. (Currently Amended) The improved electrode assembly as defined in claim ~~12~~ 1 additionally comprising means for pressured engagement of the positive conducting edge to said first elongated conductor extending substantially the entire length of said positive conducting edge portion; and

means for pressured engagement of said negative conducting edge to said second elongated conductor extending substantially the entire length of said negative conducting edge portion.

30. (Currently Amended) The improved electrode assembly as defined in claim 13 additionally comprising means for pressured engagement of the positive conducting edge to said first elongated conductor extending substantially the entire length of said positive conducting edge portion; and

means for pressured engagement of said negative conducting edge to said second elongated conductor extending substantially the entire length of said negative conducting edge portion.

31. (Original) The improved electrode assembly described in claim 1 wherein the resistance generated from the distance between the positive and negative current collectors can be reduced to satisfy any desired low level of required resistance of the electrode stack.

32. (Added) The improved electrode assembly described in claim 13, wherein each of said first elongated conductor and second elongated conductors communicate with a plurality of respective terminals on the exterior of the battery at different points along their respective lengths.

Claim Rejections per Fan under 35 USC §102

The examiner has rejected claims 1 - 30 per Fan et al US 2003/0134203 per 35 USC §102.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." ***Lindemann***

Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984).

Applicant in claim 1 and in claim 20 has added the prior claimed elements of claims 12 and 24 respectively which feature a plurality of positive and negative electrodes in a stacked arrangement with a first elongated conductor in contact with substantially the entire length of the positive conducting edge portion of the elongated positive electrode and a second elongated conductor in contact with substantially the entire length of the elongated negative conducting edge portion of said negative conducting edge portion of said negative electrode. The first and second electrodes communicate with terminals exterior to the battery case.

The cited device in Fan is completely different in structure and operation from Applicant's device as it lacks elongated conductors which communicate substantially with the entire elongated sides of the stacked electrodes.

Consequently the cited reference teaches away from applicant's claimed battery construction using elongated conductors to communicate with the entire sides and which in turn communicate with terminals outside the battery can and thus and lacks each and every element of applicant's claimed invention arranged as in claims 1 and 20 and all subordinate claims thereto.

As such Applicant's device functions differently with different components from the cited art and has elements not taught nor suggested thereby, and the objection under Section 102 per Fan is respectfully traversed.

Claim Rejections per Kaneda under 35 USC §102

Kaneda too lacks applicants claimed construction using a plurality of positive and negative electrodes in a stacked arrangement for the electrodes and elongated conductors bolted to or otherwise attached to the respective conducting edge portions. The elongated conductors contact substantially the entire edges of the plurality of positive and the plurality of negative electrodes and communicate power to terminals exterior to the battery can. The cited art has a single positive and negative electrode instead of a plurality of each and lacks the elongated conductors of applicant's device which enable low restriction of current flow through the elongated conductors to the terminals outside the battery.

Consequently, Applicant's device functions differently with different components from the cited art of Kaneda and has other elements not taught nor suggested by the cited art, and the objection under Section 102 per Kaneda is respectfully traversed.

Claim Rejections per Nakanishi under 35 USC §102

Nakanishi discloses a classic rolled or "jelly roll" style of forming the two electrodes. It lacks the stacked arrangement of applicant's claimed device using a plurality of individual positive and negative electrodes which when so stacked form elongated flat conducting edges for engagement with the elongated conductors at substantially the entire length of the flat conducting edges. Instead Nakanishi uses only two conductors, lacks the flat elongated conducting edges, and lacks the elongated conductors to engage substantially the entire flat edges.

As such, Applicant's device functions differently and has very different construction and components from the cited art of Nakanishi and has other elements not taught nor suggested by the cited art, and the objection under Section 102 per Nakanishi is respectfully traversed.

Claim Rejections per Yoshida under 35 USC §102

Yoshida also lacks elements taught by Applicant's device and the functions provided. Yoshida shows one embodiment with only two electrodes which are wound around a mandrel with a separator. Applicant's device is completely different in that the plurality

of positive and negative electrodes are stacked around the mandril as shown in figure 10 and the porous separator which runs between the plurality of stacked electrodes wraps around the mandril.

Further, Yoshida lacks the stacked arrangement of applicant's claimed device forming a plurality of individual positive and negative electrodes which when so arranged yield flat conducting edges for engagement with elongated conductors at substantially the entire length of those flat conducting edges. Yoshida thus lacks elements of applicant's claimed device and the objection under Yoshida is respectfully traversed.

Claim Rejections per Japanese Publication under 35 USC §102

The cited Japanese publication also lacks the flat stacked arrangement of the electrodes applicant's claimed which forms a plurality of individual positive and negative electrodes which when so arranged yield elongated flat conducting edges for engagement with elongated conductors at substantially the entire length of those flat conducting edges. The cited publication thus lacks elements of applicant's claimed device and the objection under Yoshida is respectfully traversed.